REMARKS:

In the Office Action dated April 3, 2009, claims 1-9, 11, 12, and 25 in the above-identified U.S. patent application were rejected. Reconsideration of the rejections is respectfully requested in view of the above amendments and the following remarks. Claims 1-9, 11, 12 and 25 remain in this application and claims 10 and 13-24 have been withdrawn.

Claims 1-5, 7-9, 11, 12 and 25 were rejected under 35 USC §112, first paragraph, as indefinite due to the language "nucleotide analog" and "pyrimidine nucleotide analog". Applicants respectfully disagree with this rejection but in order to advance the examination of the present application, these terms have been deleted from the claims. In view of the above amendments, applicants request that this rejection be withdrawn.

Claim 7 was rejected under 35 USC §112, second paragraph, regarding the recited trademarks. Claim 7 has been amended to recite the preferred fluorescent labeling groups as shown on page 4, lines 24-28. In addition, the generic names for these labeling groups have been added to the claims. In view of these amendments, applicants request that this rejection be withdrawn.

Claims 1-9, 11, 12 and 25 were rejected under 35 USC §103(a) as unpatentable over Rudert, Tyagi, Weisburg and Nunnally. The claims have been amended to be directed to a preferred embodiment where M and M' are identical fluorescent labeling groups. This amendment is supported by the disclosure on page 4, lines 31-32, of the present application. Applicants respectfully point out that in Rudert and Tyagi, a reporter dye and a quencher are essential. Rudert discloses a double labeled fluorogenic probe which forms a hairpin structure. Taq DNA polymerase cleaves the 5' end of the probe

liberating the reporter dye from the quenching effect of the 3' dye. Rudert is similar to Tyagi in that the 3' label is actually a quencher and the probe forms a hairpin structure. The office action cites column 3, lines 40-48, of Tyagi as evidence for the use of identical dye molecules at the ends of the probe. The cited passage is directed solely to modification of the absorption spectrum of identical chromophores, when the probe is constructed and the two chromophores are in contact with each other. No disclosure is provided on how and under which conditions two identical chromophores are used in a nucleic acid hybridization probe where the two chromophores are in contact with each other. The only disclosure in this respect is the use of a molecular beacon capable of forming an intramolecular hybrid by the end regions (column 3, lines 25-30, of Tyagi), i.e, the spacers that are complementary to each other. There is no disclosure regarding the use of two identical chromophores where the two chromophores are not in contact with each other (i.e. $(Z)_n$ and $(Z)_{n'}$ do not hybridize) as in the present invention. Thus, Tyagi does not disclose a nucleic acid hybridization probe having non-complementary ends and carrying identical chromophores at the ends. In view of column 3, lines 40-48, one skilled in the art would not be motivated to construct a molecule according to the present invention, since column 3, lines 40-48, disclose that the contact between the two chromophores leads to a modification of the absorption spectra. This essential contact is assured by the complementary ends of the probe. Thus, one skilled in the art were to use non-complementary ends, as in the present invention, the two chromophores would not be in contact with each other anymore and the absorption spectra would not change in a detectable fashion.

The probe according to the invention is not based on the contact of the two groups M and M'. Therefore, the groups Z_n and $Z_{n'}$ are not complementary to each other such that they do not hybridize with each other. It is essential for the present invention that the dyes are not quenched by the target sequence when the probe hybridizes to the target sequence. This is caused by the spacer Z consisting of pyrimidine nucleotides. The quantum yield of certain fluorescent dyes is reduced in the green region due to the electron transfer process taking place between nucleobases (of the target molecule) and the labeling group (see page 1, last paragraph, of the present specification). The presence of pyrimidine nucleotides in the spacer Z reduces this electron transfer and, thus, improves quantum yield. This effect was not predictable based on the disclosures of Rudert and Tyagi. Thus, the combination of Rudert, Tyagi, Weisburg and Nunnally would result in a probe construct whose respective termini comprise fluorescent labeled homo-polymeric nucleotide sequences which are complementary with each other in order to hybridize with each other not a probe with pyrimidine sequence at both ends which cannot hybridize, and identical fluorescent labeling groups. A probe with pyrimidines and fluorescent labeling groups at both ends is an essential feature of the presently claimed invention. Applicants contend that the combination of Rudert, Tyagi, Weisburg and Nunnally does not suggest such a probe and request that this rejection be withdrawn.

Applicants respectfully submit that all of claims 1-9, 11, 12 and 25 are now in condition for allowance. If it is believed that the application is not in condition for allowance, it is respectfully requested that the undersigned attorney be contacted at the telephone number below.

In the event this paper is not considered to be timely filed, the Applicant respectfully petitions for an appropriate extension of time. Any fee for such an extension together with any additional fees that may be due with respect to this paper, may be charged to Counsel's Deposit Account No. 02-2135.

Respectfully submitted,

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